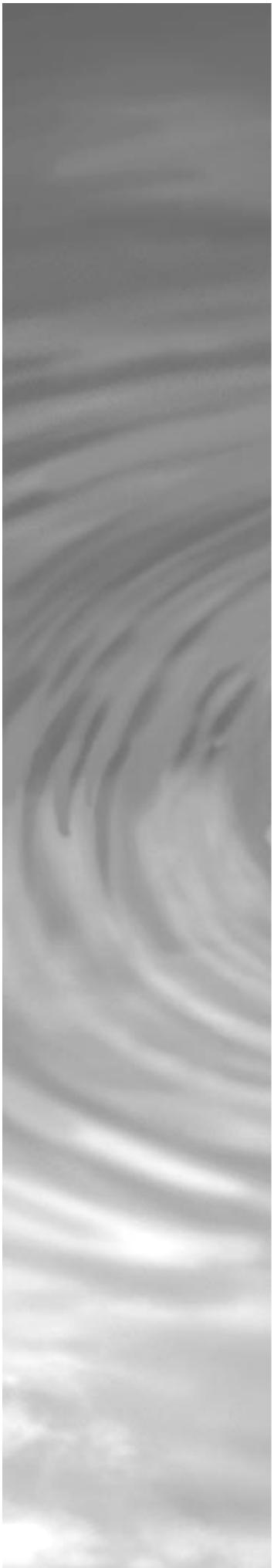
Working with NASA Marshall Space Flight Center:

The Technology Transfer Process



The primary goal of the technology transfer process at NASA Marshall Space Flight Center (MSFC) is to encourage broad use of MSFC-developed technologies by American private enterprise. This booklet is designed to expedite the process of doing business with MSFC. There are answers to frequently asked questions, steps to initiate the process, and an overview of the various ways to partner with MSFC. We welcome the opportunity to present our technology and extend an invitation for you to partner with NASA Marshall Space Flight Center to maintain American industry as the world leader in technology development.

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How to Work with MSFC

There are several ways a company can work with Marshall Space Flight Center to access NASA technology, to integrate that technology into a product line, and/or to further develop that technology to create new products. The working relationship is usually formalized as either a patent or copyright license and/or as an agreement under the National Aeronautics and Space Act of 1958. A Space Act Agreement is similar to a Cooperative Research and Development Agreement (CRADA) used by other federal agencies, but it is more flexible.

Company Options	Agreement with MSFC	Steps Company Should Take
License MSFC technology	Patent or copyright license	Submit license application with commercialization plan to the Technology Transfer Department[1]
Work with MSFC to develop a viable commercial product based on a MSFC technology	Space Act Agreement for joint development[2]	Submit letter of request and Customer Request Form (CRF) to the Technology Transfer Department[3]
Work with MSFC in a shared-resource project that supports and stimulates advanced research and technology development	Cooperative Agreement	Respond to Cooperative Agreement Notice or submit unsolicited proposal to the Grants and Research Contracts Branch[4]
	Space Act Agreement[2]	Submit letter of request and CRF to the Technology Transfer Department[3]
Use unique MSFC facilities for cooperative and/or company research	Space Act Agreement[2]	Submit letter of request and CRF to the Technology Transfer Department[3]
Develop and provide a process or product to NASA (small businesses only)	SBIR/STTR fixed price contract	Respond to annual NASA SBIR or STTR solicitation[5]

Notes

[1]See pages 11–12 for instructions and pages 16–17 for contact information.

[2]A Space Act Agreement can be partially or fully reimbursable.

[3]See pages 20–21 for sample letter and blank form and page 17 for contact information.

[4]For more information, contact the Grants and Research Contracts Branch at (256) 544–0866.

[5]More information is available via the Internet (http://sbir.nasa.gov).

Questions & Answers about Working with MSFC

This section answers some of the basic questions about technology transfer, patent licensing, and privacy issues. Feel free to contact the Technology Transfer Department for more information (see pages 16–17 for contact information).

MSFC's Technology Transfer Program

Why is it important for MSFC to commercialize its technology?

The U.S. Congress and the NASA Administrator have emphasized the need to transfer NASA-developed technology and expertise to U.S. industry to increase U.S. industrial competitiveness, create jobs, and improve the balance of trade. Emphasis is being placed both on transfer of technology for mission application with the aerospace industry and for dual-use applications with nonaerospace industries.

Will MSFC conduct research to help a company solve technical problems or improve products?

If MSFC has technology available that would be useful to the company, employees would be pleased to discuss its applications to the company's need. Under a Space Act Agreement, a joint development effort could be conducted if MSFC has interest in the research.

What services are available to assist companies with technology transfer?

MSFC has partnered with Research Triangle Institute (RTI) for the purpose of facilitating communication between MSFC inventors and companies. In addition, NASA established a Commercial Technology Network (NCTN) to assist companies interested in commercializing NASA technologies. This network includes the Regional Technology Transfer Centers and the National Technology Transfer Center.

Available Technologies

Where can I find information on new NASA technologies?

NASA publishes formal technical reports describing research work conducted at NASA facilities. In addition, there are several online sites to access information about transferable technology:

MSFC's Technology Transfer Department
http://www.nasasolutions.com

NASA *Tech Briefs*
http://www.nasatech.com

NASA TechTracS
http://technology.nasa.gov

NASA Commercial Technology Network
http://nctn.hq.nasa.gov

Whom do I contact to receive further information on a particular MSFC technology?

Contact the Technology Transfer Department (see pages 16–17).

Is there a listing of MSFC patents and patent applications that are available for licensing?

Yes. Some information is available online (http://www.nasasolutions.com) and a full listing is available from Patent Counsel (see page 17).

Space Act Agreements

How is a Space Act Agreement different from a Cooperative Research and Development Agreement?

They are essentially the same. The National Aeronautics and Space Act of 1958 authorizes NASA to work cooperatively with industry. The Technology Innovation Act authorized other government research organizations, which did not have similar provisions in their charters, to use CRADAs. NASA continues to use the Space Act authority because it provides more flexibility than the Innovation Act.

Can costs and/or resources be shared under a Space Act Agreement?

Yes. In certain cases, there is the potential for MSFC to leverage resources. All resources are negotiated by MSFC.

Who receives patent rights to technologies developed under a Space Act Agreement?

The company will receive the rights if all of the inventors are employed by the company. MSFC will receive the rights if only NASA employees invent the item. A jointly owned patent will result if both company and NASA employees invent the item. In any event, patent rights will be specified in the Space Act Agreement and negotiated in accordance with applicable law(s).

Patent Licenses

Can MSFC grant exclusivity for a particular technology?

Exclusive rights to a technology can be licensed depending on how many companies are interested and on the company's license application. Other factors taken into account are the company's commercialization plan and a demonstrated ability to successfully complete a commercialization effort.

What if another company is interested in the same technology that my company wants to commercialize?

There are a number of possible licensing agreements: nonexclusive, co-exclusive, exclusive, exclusive in a particular field of use or geographic region, and various combinations of these. MSFC requires interested companies to submit a commercialization plan for the particular technology. MSFC uses these plans to determine which licensing arrangement will best ensure successful commercialization of the technology.

How long does the patent licensing process take? What will it cost in up-front money?

The process takes about 3 to 4 months after receipt of the license application and commercialization plan. This includes a mandatory waiting period of 2 months for exclusive licenses, during which time a member of the public can file a written objection. Down payments generally are set according to the value of the technology and are negotiable.

What percentage in royalties does MSFC require under a licensing agreement?

The percentage in royalties to be paid to MSFC in a licensing agreement is negotiable and varies according to the type of license issued (i.e., exclusive or nonexclusive) and a number of other factors.

Privacy Issues

Are discussions with MSFC personnel kept confidential? What about the Freedom of Information Act (FOIA)?

MSFC personnel are obligated by law to keep all company proprietary information confidential. Company information revealed to MSFC in the process of developing, negotiating, signing, and completing a Space Act Agreement is exempt from FOIA for up to 5 years. This protection is guaranteed by the National Aeronautics and Space Act of 1958 (as amended).

Does MSFC enter into confidentiality agreements with prospective commercial partners to facilitate the exchange of technical information?

Yes. Copies of this standard agreement can be obtained from the Technology Transfer Department (see page 17).

Can I use MSFC facilities? Is there a charge for the usage? Must the data resulting from my tests in an MSFC facility be made public?

Industry or individuals can use MSFC facilities on a space-available basis. If the research conducted is of interest to NASA, MSFC may negotiate a cost-sharing arrangement; however, the results could eventually be published by NASA. If the company, however, pays the total cost associated with use of the facility, the data will not be made public.

Technology Briefings

Marshall Space Flight Center often uses technology briefings to select partners for technology transfer programs. This formal procedure is provided to establish a fair and equitable selection process and to improve the odds that the best qualified company is selected.

The Technology Briefing Process

1. MSFC identifies candidate companies.

2. MSFC hosts a technology briefing for companies' technical and/or management representatives. Briefings provide information on the technology and may include an overview of the patent/copyright licensing process.

3. Companies prepare and submit a commercialization plan (see page 12) and, depending on the technology, a license application (see page 11).

4. MSFC reviews the submitted commercialization plans and selects the best according to established evaluation criteria (see page 13).

5. Each selected company negotiates the Space Act Agreement and/or patent or copyright license agreement with MSFC.

6. NASA's general counsel and/or MSFC's director (or designee) and the company's chief executive officer sign the agreement, formally establishing the project/partnership between MSFC and the company.

NASA Patent Licensing Program

NASA owns over 1,000 patents and patent applications that protect inventions in hundreds of subject matter categories. NASA makes these inventions available to industry through its Patent Licensing Program, which is administered by the NASA Office of General Counsel, NASA Headquarters, Washington, D.C.

Legal Requirements

NASA has the authority to grant licenses on its domestic and foreign patents and patent applications pursuant to 35 U.S.C. 207-209. NASA has implemented this authority by means of the NASA Patent Licensing Regulations, 14§CFR 1245.200 *et seq.*

All of NASA licenses are individually negotiated with the prospective licensee, and each license contains terms concerning transfer (practical application), license duration, royalties, and periodic reporting. NASA patent licenses may be exclusive, partially exclusive, or nonexclusive.

How to Find Information on NASA Patents

Information on NASA patents and patent applications can be found from:

- Patent and technical literature searches
- *NASA Tech Briefs*
- NASA Regional Technology Transfer Centers
- NASA Field Center Technology Transfer/Commercialization Offices (MSFC patents are listed online at http://www.nasasolutions.com/patents/index.html)
- NASA Field Center Patent Counsel
- NASA Headquarters Office of General Counsel
- NASA TechTracS (http://technology.nasa.gov)

How to Apply for a Patent License

If you wish to apply for a patent license for a particular MSFC technology, send an application to MSFC's Technology Transfer Department. The application, at a minimum, should contain the following information:

A. The identity of the particular invention—either the patent application serial number, the patent number, or the NASA case number. When possible, include the title of the invention and patent issue date.

B. The type of license being applied for (i.e., exclusive, partially exclusive, or nonexclusive) and any desired limitations (e.g., field of use, geographic).

C. The name and address of the person, company, or organization applying for the license. Where applicable, include citizenship, place of incorporation, and name of the patent corporation.

D. The name, address, and telephone number of the applicant's representative who has authority to conduct licensing negotiations.

E. A description of the nature and type of applicant's business. This description should include any products or services that the applicant has successfully commercialized and the approximate number of people employed by the applicant.

F. An explanation of how the applicant became aware of the particular invention.

G. A statement as to whether the applicant is a small business, which is generally defined as an independently owned and operated business with less than 500 employees.

H. A detailed commercialization plan for developing and/or marketing the invention. More information on the required components of the commercialization plan is presented on page 12.

I. The identity of licenses previously granted to the applicant under any federally owned inventions.

J. A statement describing (to the applicant's best knowledge) the extent to which the invention is being practiced by private industry, government, or both and the extent to which the invention is commercially available.

K. Any other information the applicant believes will support a determination to grant the requested license to the applicant.

How to Prepare a Commercialization Plan

All patent/copyright license applications must be accompanied by a commercialization plan. This plan must include the information listed below. As stated on page 7, all technical and business information will be kept confidential if marked as such.

1. The nature of the company's business, identifying products and services that have been successfully commercialized in the past 5 years or are proposed for commercialization.
2. A copy of the company's financial report (e.g., Dun & Bradstreet report) and/or the latest annual report.
3. A statement indicating whether your company qualifies as a small business firm as defined in 37 CFR 404.3(c).
4. An overview of how the company plans to use the licensed technology, including any products that will be developed and their potential customers, if applicable.
5. If a product is to be developed, include a 3- to 5-year pro forma income statement, including number of units per year, average price per unit, direct and indirect expenditure estimates, and other relevant data.
6. A chart showing what milestones need to be achieved and when.
7. A statement of the nature and amount of anticipated manpower, money, and other company resources believed to be required.
8. A statement of the field(s) of use in which your company intends to apply the technology.
9. The identified role of MSFC. Will it be as technical consultant or will NASA research, design, or other engineering be required? Define anticipated manpower requirements.
10. Proposed royalty rates, including up-front fees and yearly minimums.

Evaluation Criteria for Commercialization Plans

MSFC considers a variety of factors when evaluating a company's business proposal, whether it is a license application or a commercialization plan.

Technical Factors

- Understanding the technology
- Technical capabilities and facilities
- Awareness of technical challenges and constraints and a plan for solving them
- Available and accessible technical and engineering skills
- Assessment of design changes necessary to achieve commercialization

Business Factors

- Goals of project agree with company's overall mission and goals
- Demonstration of strength of company in field of technology relating to product
- Clear identification of existing and potential customers
- Characterization of market, including size and estimate of penetration
- Competitive advantage and position
- Clear work/business plan, including well-defined roadmap to commercialization
- Demonstrated development, manufacturing, and marketing capabilities
- Financial condition of company

Management Factors

- Leadership and commitment of management
- Well-defined project management, schedule, and resources
- Reasonableness of proposed effort, including time and resource estimates
- Strengths and capabilities of management team, including past experience
- Record of successful and unsuccessful technology development leading to commercial products

Economic Impact

- Financial benefit to company and NASA
- Number and quality of jobs expected to be created
- Impact on consumers and taxpayer benefits
- Time to commercialization impact
- Expectations for exportation of product
- Financial and organizational impact on company
- Economic impact in company's local community

Processing of License Applications

Once MSFC's Technology Transfer Department has received and reviewed a complete license application, including the commercialization plan, it makes a preliminary recommendation to NASA Headquarters. This recommendation will be either:

- To grant the license as requested
- To grant the license with modification after negotiation with the licensee
- To deny the license.

For exclusive and partially exclusive licenses, an additional step is required before a final determination to grant a license can be made. This step involves placing a notice of a prospective license, identifying the invention and the prospective licensee, in the *Federal Register* and providing an opportunity for filing written objections within a 60-day period. Any objections are taken into consideration.

Proposal and negotiation of the license fee are integral parts of the entire licensing process; there is no single point in the process where such fee is the exclusive concern, nor is there any point where such fee does not interplay with other considerations.

Once a final determination is made to grant a license, final negotiations take place between the prospective licensee and MSFC, and the license is granted.

Applicants who have had their application for a license denied and objectors to *Federal Register* notices who can demonstrate damage by the proposed action have the right to appeal MSFC licensing determinations. For further information, please contact MSFC's Patent Counsel (see page 17).

Technology Transfer Department

The Technology Transfer Department at Marshall Space Flight Center has eight mission areas:

- **New Technology Reporting**
  Disclosing all new inventions and innovations developed by MSFC and its contractors.

- **Technology and Software Commercialization**
  Patenting and licensing MSFC-developed innovations for commercial use.

- **Small Business Programs**
  Strengthening the role of small businesses in achieving federal technology needs.

- **Technology Development Partnerships**
  Formulating and facilitating partnerships with industry, academia, and other government laboratories to meet MSFC's needs.

- **Technology Deployment Partnerships**
  Partnering to convert existing MSFC technology into non-NASA applications.

- **Strategic Alliances**
  Working closely with national, regional, and local organizations to disseminate information, leading to potential partnerships and economic development.

- **Facilities Commercialization**
  Using *Commerce Business Daily* and briefings to industry to commercialize unique MSFC facilities.

- **Technology Education and Outreach for Economic Development**
  Working with and disseminating MSFC's technology information to industry, academia, the general public, congressional leaders, and other government organizations.

The department has established several teams that work together to achieve these objectives.

Commercialiazation Assistance Team

Assigned to one of five industry market sectors, members of the commercialization assistance team assess and commercialize NASA-owned inventions and technologies. Staff negotiate Space Act Agreements and licenses between MSFC and industry partners.

Aerospace
(256) 961-4008
ttd.aerospace@msfc.nasa.gov

Manufacturing
(256) 961-4009
ttd.manufacturing@msfc.nasa.gov

Optics
(256) 961-4010
ttd.optics@msfc.nasa.gov

Earth Sciences
(256) 961-4011
ttd.earth@msfc.nasa.gov

Advanced Propulsion
(256) 961-4012
ttd.propulsion@msfc.nasa.gov

Outreach Team

The outreach team publicizes those MSFC-developed technologies that are available for transfer and technology transfer successes. These efforts are conducted using Technology Opportunity Sheets, *NASA Tech Briefs, Commerce Business Daily, NASA Select, Marshall Momentum,* the Internet, news releases to and articles in trade journals, and presentations at conferences.

(256) 544-6532
ttd.outreach@msfc.nasa.gov

New Technologies Team

In an effort to track MSFC's technology resources, this team maintains an inventory of the scores of innovations developed at MSFC each year. This inventory is supplied to the NASA TechTracS online database of all NASA technologies (http://technology.nasa.gov).

(256) 544-1933
ttd.newtech@msfc.nasa.gov

Patent Counsel Team

MSFC's Patent Counsel team prepares patent applications and other patent-related documents. The team also reviews Space Act, license, and nondisclosure agreements. Counsel help determine the patent potential of new MSFC technologies and oversee intellectual property issues.

(256) 544-0013
ttd.patent@msfc.nasa.gov

Small Business Programs

The Technology Transfer Department manages the congressionally mandated Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) programs at MSFC. These programs seek to stimulate technological innovation by small businesses to meet federal R&D needs and increase the commercial applications of these results while encouraging participation of socially and economically disadvantaged persons and women-owned small businesses. Other small business programs include the Minority- and Women-Owned Business Initiative and the Small Business Incubator Program.

(256) 544-7239
ttd.sbir@msfc.nasa.gov

For More Information

NASA MSFC Space Flight Center
Technology Transfer Department
Mail Code: CD30
Huntsville, AL 35812

Telephone: (256) 544-4266
Fax: (256) 544-3151
E-mail: ttd.help@msfc.nasa.gov
Internet: www.nasasolutions.com

Appendix

- Marshall Space Flight Center Space Act Agreement Request Form

SPACE ACT AGREEMENT REQUEST FORM
for joint technical projects with:
Marshall Space Flight Center (MSFC)
Phone: (256) 544-1484

MSFC

Company Name: _____ Authorizing Official: _____

_____ Title: _____

Address: _____ Phone: _____ Fax: _____

_____ email: _____

_____ Technical Point of Contact: _____

_____ Phone: _____ Fax: _____

_____ email: _____

Title of proposed joint technical project: _____

_____

Please answer the following questions on a separate sheet(s) and attach to this form:

1. Describe anticipated project outcome (e.g., product, process, capability).

2. Provide a Statement of Work (SOW) consisting of:
   (a) A comprehensive description of the agreement.
   (b) The responsibilities of the parties including the participant, MSFC and joint responsibilities.
   (c) A schedule of proposed activities along with important dates.

3. Describe unique MSFC resources (facilities, equipment, materials, expertise) needed to accomplish this task.

4. Describe what effort, resources and the level of reimbursement your company will provide.

5. Will your personnel be working on site at MSFC? Will they require office space and equipment? If so how much space and for how long?

6. Describe any past, current or prospective relationships (e.g., contracts, grants, agreements, etc.) your organization has with NASA, the U.S. Government, and/or other entities (domestic or foreign), which may be related to the proposed project.

7. If your business entity is not domestically owned and operated, please explain.

8. Please provide the names of any MSFC Technical Points of Contact.

I certify that every reasonable effort has been made to locate a non-government source for performing this project and to the best of my knowledge no alternate source is feasibly available. Any information (hereon or otherwise) that we wish protected from non-governmental personnel will be marked as proprietary. We understand these activities are either fully or partially reimbursable to MSFC and that execution of agreements can take up to 75 working days dependent upon complexity of negotiations, timely submission of required information and availability of resources.

Authorizing Official _____
Signature Date

Please transmit an original signed copy of this completed form under company letterhead to:
Space Act Agreement Request
CD30/Technology Transfer Department
MSFC, AL 35812